DOCUMENT RESUME

ED 087 344 HE 005 151

AUTHOR Ball, Klonda Marlene; Wurster, Stanley R.
TITLE An Exploration of Factors Related to Fear of EF500 Research Methods as Expressed by Graduate Students at Arizona State University, Summer School, 1973.
PUB DATE 73
NOTE 68p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Fear; *Graduate Students; *Higher Education; *Psychological Patterns; Research Projects; *Student Attitudes
IDENTIFIERS *Arizona State University

ABSTRACT

This study: (1) determines and quantifies the degree of fear expressed by graduate students at Arizona State University toward a research methods course (EF 500); identifies graduate students who indicate a high measure of anxiety for EF 500; and (3) compares them with students in whom measured fear is expressed to a low degree, is absent, or is denied. One hundred and eighteen graduate students were administered an attitude scale with five positions of equal value used to determine the degree of fear. Results indicated: (1) males and females showed little difference in fear expressed toward the course; (2) no significant differences were found between the older and younger students; (3) elementary and secondary teachers expressed no mean fear differences of significance; (4) the significance in differences between those in education and others may be related to the "person-oriented, thing-oriented concepts"; (5) the difference in fear expressed was not significant between those who had many graduate hours and those who had few; and (6) there was no significant difference shown between teachers who had little or a great deal of experience. (MJM)

ED 087344

AN EXPLORATION OF FACTORS RELATED TO FEAR OF EF500 RESEARCH METHODS AS EXPRESSED BY GRADUATE STUDENTS AT ARIZONA STATE UNIVERSITY, SUMMER SCHOOL, 1973.

KLONDA MARLENE BALL
GRADUATE STUDENT
ARIZONA STATE UNIVERSITY

AND

STANLEY R. WURSTER
ASSISTANT PROFESSOR
ARIZONA STATE UNIVERSITY

SUMMER, 1973

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

TABLE OF CONTENTS

	Page
TITLE PAGE	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iv
I. INTRODUCTION	1
The Problem	1
Statement of the Problem	1
Purpose of the Study	2
Objectives of the Study	2
Assumptions	3
Limitations of the Study	4
Definitions of Terms	4
II. REVIEW OF LITERATURE	5
Theoretical Basis of Anxiety	5
Anxiety and Learning	6
Anxiety and Motivation	8
Anxiety and Defense Mechanisms	8
Graduate Schools as Anxiety Arousal Stimulus	9
Student Teacher Roles	10
Testing Anxiety	11
Fear of Research Methods and Revelant Fear Factors	15
Preferred Traits of Research Designers	16
Other Fear Provoking Factors	18
Summary	26
III. METHODS AND PROCEDURES	30

Page

Selection of Participants..... 30

Development of the Instrument..... 30

Data Collected..... 32

Hypotheses To Be Tested..... 32

Statistical Treatment of the Data..... 34

IV. ANALYSIS AND INTERPRETATION OF DATA..... 35

Attitude Scale..... 35

Questionnaire..... 36

Presentation of Data..... 36

Analysis of the Data..... 40

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS..... 45

Summary..... 45

Conclusions..... 48

Recommendations..... 52

BIBLIOGRAPHY..... 55

APPENDIX A. Questionnaire and Attitude Scale..... 58

APPENDIX B. Cover Letter..... 62

LIST OF TABLES

TABLE		Page
I.	Assigned Values for Intervals Scored By Research Methods Questionnaire.....	35
II.	Group Classifications of Factors Related To Fear of Research Methods.....	37
III.	Frequency Table of Graduate Hours Beyond the B.A. and B.S. For Students Currently Enrolled in EF 500.....	39

AN EXPLORATION OF FACTORS RELATED TO FEAR OF EF 500 RESEARCH METHODS, AS EXPRESSED BY GRADUATE STUDENTS, AT ARIZONA STATE UNIVERSITY, SUMMER SCHOOL, 1973.

CHAPTER I

INTRODUCTION

Graduate students at Arizona State University, overtly express apprehensions toward a course required for the Masters Degree, EF 500 Research Methods. Instructors in turn, voice concern about the attitudes expressed by the students toward the course. Research Methods is an introductory course.

> ... designed for students with a minimal background in statistics. It emphasizes the production and consumption of educational research as basic to all instruction and foundational to graduate programs. (1:153)

A research study is required.

Statement of the Problem

Both faculty and students in the education department of Arizona State University realize the threatening aspects of EF 500 Research Methods. And though the attitudes of unbasiness expressed about the course by the students have been previously surveyed, there has been no quantifying of those attitudes for purposes of study.

TABLE OF CONTENTS

	Page
TITLE PAGE	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iv
I. INTRODUCTION	1
The Problem	1
Statement of the Problem	1
Purpose of the Study	2
Objectives of the Study	2
Assumptions	3
Limitations of the Study	4
Definitions of Terms	4
II. REVIEW OF LITERATURE	5
Theoretical Basis of Anxiety	5
Anxiety and Learning	6
Anxiety and Motivation	8
Anxiety and Defense Mechanisms	8
Graduate Schools as Anxiety Arousal Stimulus	9
Student Teacher Roles	10
Testing Anxiety	11
Fear of Research Methods and Revelant Fear Factors	15
Preferred Traits of Research Designers	16
Other Fear Provoking Factors	18
Summary	26
III. METHODS AND PROCEDURES	30

Purpose of the Study

The general purpose of this study is to collect data which the instructors of EF 500 Research Methods, might use to gain insight and direction for modifying, enriching or changing the current program.

Specifically, the purpose of the study is to, (1) determine and quantify the degree of fear expressed by graduate students toward EF 500 and, (2) to identify graduate students who indicate a high measure of anxiety for Research Methods and compare them with students in whom measured fear is expressed to a low degree, is absent or is denied.

Objectives of the Study

The prime objective of this study is to provide an instrument with which the fear attitudes of the graduate students for EF 500 can be measured and quantified. The second objective is to explore the seemingly relevant background factors of graduate students that may be related to their expressed apprehensions toward Research Methods. In investigating the background factors that may be relevant to the apprehensions displayed toward EF 500 the following hypotheses were developed:

1. There will be no significant difference in the degree of fear expressed by male and female graduate students toward EF 500 Research Methods.
2. There will be no significant difference in the degree of fear expressed by older and younger graduate students toward EF 500 Research Methods.

3. There will be no significant difference in the degree of fear expressed by elementary and secondary teachers toward EF 500 Research Methods.
4. There will be no significant difference in the degree of fear expressed by teachers with moderate classroom experience and teachers with extensive experience toward EF 500 Research Methods.
5. There will be no significant difference in the degree of fear expressed by students who majored in education and those who majored in other areas, i.e. math and the behavioral sciences, toward EF 500.
6. There will be no significant difference in the degree of fear expressed by students with moderate graduate hours and those with many graduate hours toward EF 500 Research Methods.

Assumptions

Basic assumptions make in preparing this research study were:

1. That attitudes of expressed fear can be codified and quantified with numerical value for further study.
2. That a valid attitude measuring instrument could be designed which would identify fear factors expressed for use in further study.
3. The students would respond to the background questionnaire and attitude scale with honesty.
4. That the population of summer school students used

was in fact a representative sample of Education graduate students at Arizona State University.

Limitations of the Study

The limitations of the study were as follows:

1. The questionnaire and attitude scale were presented to the students three-fifths of the way through the course and attitudes may have changed significantly after time spent in class.
2. No posttest was given.

DEFINITION OF TERMS

Definitions of the terms used in this study were:

Expressed fear, uneasiness or apprehensions. Those openly spoken or listed by the student on an attitude measuring instrument.

Anxiety. A pattern of complex emotional tension characterized by apprehensions, fearfulness, uneasiness; psychic pain.

Attitude. A consistent, learned, emotionalized predisposition to respond in a particular way to a given object, person, or situation.

CHAPTER II

REVIEW OF LITERATURE

Chapter II has three principal divisions. Section one summarizes some of the theoretical background of anxiety and focuses on its pervasive presence in learning, motivation and defense mechanism use. Section two briefly surveys the graduate school as an anxiety arousal stimulus for graduate students. Section three explores studies which may relate to the apprehensions expressed by graduate students toward EF 500 Research Methods.

THEORETICAL BASIS OF ANXIETY

In presenting a review of studies pertinent to anxiety and emotions Izard (11:47) states that Freud did not give a definition of anxiety in his early writings for "everyone of us has experienced the sensation." Levitt (13:2) in surveying the historical basis of anxiety concedes that man's ability to experience the sensation of anxiety is an inheritance from his early ancestors. Originally, a survival mechanism, fear has now lost most of its survival value. Furthermore, Levitt (13:2) indicates that the strength of fear and its ability to motivate man's behavior is as strong as it is in unreasoning animals. Man may use fear to train younger members of his society but it is his own primitive, pervasive anxiety that man seems unable to cope with.

Several similar definitions of fear are recited by Levitt (13:5),

> A painful uneasiness of the mind over an impending or anticipated ill.

The simple statement above was taken from Webster's Dictionary, Third Edition. The American Psychological Associations' 1952 definition as restated by Levitt is:

> A danger felt and perceived by the conscious portion of the personality ... with or without stimulation from the external situation.

Levitt (13:6) concludes that fear and anxiety have a "common core of meaning" and that their similarity is clearly reflected in their identical physiological concomitants. Izard (11:46) stipulates that anxiety does not refer to a single class of consequences or acts:

> Anxiety is not unipolar, unidimensional or unifactor in nature ... but a complexity, a variable combination of elements ... with the key emotion in anxiety, fear.

Anxiety and Learning

Learning in man occurs when a relatively permanent modification of behavior occurs as a result of conditions in the environment. (19: 8) The two most prominent theories which relate the effect of anxiety on learning were developed at the University of Iowa and at Yale. The Iowa theory, according to Levitt (13:137) conceives of anxiety as a general energizing drive. Anxiety is thought to strengthen all concomitant responses. The response tendencies are ranked by the organism into a strength and a habit hierarchy of responses. Simple tasks are not thought to be affected by anxiety but anxiety disrupts complex learning until a correct habit is ingrained which eases the anxiety. Consequently, anxiety is a negative

confusing force when related to complex tasks, according to the Iowa theory.

Yale theorists postulate (13:137) that anxiety is determined by the situational occurrence interacting with the personal characteristics of the person involved. Each individual develops his own mode of reacting to anxiety in either task-relevant or task-irrelevant situations. But, the perceptions of the task by the individual are more important than either the difficulty or simplicity of the task. Presumably a student perceiving a task as anxiety provoking will respond anxiously regardless of the difficulty of the task he is attempting.

A newer third theory of learning, the Yerkes-Dodson Law is also reviewed by Levitt (13:137). These theorists posit that the relationship between anxiety and learning is curvilinear; that is, both high and low levels of anxiety disrupt learning. Only a moderate amount of anxiety is beneficial for learning and the Yerkes-Dodson Law states:

> ...that optimal anxiety levels will be inversely related to the complexity of the task. (13:137)

In other words, high anxiety levels disrupt complex concept learning. Highly anxious students will be able to perform best on very simple problems.(19:400) Travers (19:266) lists other experiments which reinforce the Yerkes-Dodson Law. Thus a student entering any class with a high state of anxiety would, according to the three current learning theories, have great difficulty with any but the simplest concepts introduced in the course.

Anxiety and Motivation

Psychologists hint that learning motivation is perhaps the most complex of all of the education concerns related to learning. (20:23) Travers (19:381) in analyzing the relationship of motivation, anxiety, and learning suggests that simple drives in lower animals may be similar to motivation-learning relationships in man. There is evidence that as drive level increases, learning also increases until the drive reaches a maximum point. (This is another expression of the Yerkes-Dodson Law.) And as the difficulty of the task is increased the maximum level of motivation decreases. So it is that on complex tasks the maximum motivation level is lower than on simple tasks. Travers (19:381) also cites the commonplace experience of a person overly motivated and wanting to succeed so badly that their performance is inhibited and disrupted; they fail at the task. One wonders if students in a complex learning situation have increased drive motivation to too high a level to overcome anxieties they may have and thusare unable to learn - - or if their motivation is so low on a very complex task that they give up unable to attend to the task of learning.

Anxiety and Defense Mechanisms.

The physical body maintains equilibrium or balance without conscious effort; this balance is called homeostasis. (13:34) An individual who is overwhelmed by anxiety is in a state of disbalance. His normal functioning may be completely disrupted and impaired. (10:957)

To deal with anxiety man uses coping methods which delimit conflict and relieve his psychological disequilibrium. These methods of coping are called "mechanisms of defense." (9:102) The two mechanisms of defense which seem relevant to this study are avoidance and denial.

One of the most common ways of defending oneself against anxiety is to avoid the anxiety arousing stimuli. (13:36) Avoidance may be either consciously or unconsciously provoked but is a fairly limiting mechanism. If avoidance of the threatening stimulus is not possible an even more archaic method of coping may be selected; one can simply deny its existence. Denial is usually an unconscious process and often co-teams with avoidance as a defense mechanism. Hutt (9:108) reviews the work of Hartman who postulates that the development of ego controls such as perception, motility, memory, and learning are a function of the inner constitutional factors of man and that needs and external factors become operative after the early phases of development have passed. He thus concludes that coping behaviors are simply normal behaviors and not pathological defenses as often postulated. (9:108) Accepting this view, it is possible to conjecture that students having a high degree of anxiety toward a class may avoid enrolling in that class as long as possible.

GRADUATE SCHOOLS AS ANXIETY AROUSAL STIMULUS

A review of the higher education journals indicates

professors are aware that graduate school may be a high anxiety arousal experience for students. A summary of several articles suggest a number of alternatives as well as a discussion of the problem.

Student Teacher Roles

Loewenberg envisions graduate school learning as more than just an intellectual process. It is,

> A series of emotional involvements which are themselves a vital communication between students and teachers which may constitute a resistance against the intellectual process. (14:610)

Loewenberg suggests that student development is often sabotaged by professors who " perpetuate a psychology of domination."(14:611) This infantilization is Freud's "phenomena of transference." Quoting Freud, Loewenberg indicates that transference is " a universal phenomena of the human mind which dominates the whole of each person's relations to his environment." (914:611) To return to graduate school after having been an independent adult would seem to represent emotional regression, according to Loewenberg. And rather than being recognized and made a vehicle for the students learning the professors deny the transferences. In fact, says Loewenberg, the student relationship is one of domination and submission with the professor becoming the transfered father and the student an almost helpless dependent child. Loewenberg further postulates that student unrest within the graduate school may be less with the content of the curriculum and more with the "infantilization" to which the student is subjected. He concludes that:

> The spirit of education is to help a student realize his own potentiality, become respected as an individual. If he is demeaned by irrational rules and regulations he will be unable to work in graduate school as an adult. (14:615)

Dr. Thomas Mayhew, in a speech given on campus at Arizona State University June 29, 1973, said "Fear has been the historical way for teachers in the public schools to control students for the last two hundred years." He then referred to the classic example of Pygmalion and ended his remarks by saying, " The difference between a flower girl and a lady is simply in the way the girl is treated." And it may be so with students.

Testing Anxiety

Anxiety about failing has become a pervasive phenomenon in our society. The Yale theorists have been studying test anxiety and as reviewed by Levitt (13:116) have found that test anxiety is a " near-universal" experience in this country which is a " test-giving and test-conscious culture." The term test simply means ordinary classroom evaluation. Test performance has great importance for students in our culture and frequently may seriously affect the course of the students life.

Elbow (4:220) maintains that though students need feedback to learn, grades are not feedback but "hidden criteria judgments" which the student has little power over. Elbow further maintains that:

> ...performance on papers, in laboratories, on examinations, attendance and preparation for class do not

> evaluate the components of a good student performance. (4:221)

A grid useable in graduate school for student evaluation was designed by Elbow. Possible factors for the grid were:

- -Command of course information
- -Understanding of central ideas
- -Imaginative and creative use of subject matter
- -Class contribution (preparation, attendance, participation)
- -Growth over semester
- -Diligence and effort (4:223)

Wall (20:21) points out that many normal educational circumstances are high anxiety provoking to students, notablly examinations. He reviews a study by Calvin, Mc Guigran and Sullivan, who worked with undergraduate women students and found that examination performance was markedly improved if an outlet for anxiety was permitted (free comment etc.). Wall further indicates that freedom on the part of students to express their anxieties coupled with skillful reassurance from the teacher would be likely to insure the anxiety was not so inhibiting if the examination had to be given.

Loewenberg (14:617) simply comments that:

> Graduate candidates yearn to be protected, shielded, defended from external threats such as hostile faculty members or reality testing of his ability.

A study of the effects of anxiety on the quantity of examination preparation by Martin and Meyers (15:1) indicates that test anxiety is not only a complex subject but that tests may not "test" either the students knowledge or what the professor hopes he is testing. Using advanced graduate students

preparing for doctoral qualifying exams, they found that the total amount of study time during two weeks prior to the exam correlated -.55 with the mean anxiety level during that period. Unable to generalize such a unique group finding to other students, Martin and Meyers studied undergraduates as subjects in an investigation of the relationship between pretest anxiety and the amount of preparation for the test. In addition they examined the relationship between quantity of preparation and performance.

One hundred elementary education majors in a difficult mathematics course at the University of Texas served as subjects. The one semester course was considered a stressful academic situation. The students, all girls, were given a Trait Anxiety Inventory and State Anxiety short form. They also responded to four daily short form Anxiety Inventories prior to the test. The classes were taught by two different instructors and an analysis of variance was performed to check for significant differences between instructors, anxiety, and study. Group B reported high anxiety levels (in excess of 8.45 on the short form) for five days before the test and group A for two days. An analysis of variance revealed that mean anxiety levels for both groups increased significantly as the test neared. Group A's mean anxiety was 8.09 with a standard deviation of 3.65. Group B's mean anxiety was 9.62 with a standard deviation of 5.2. Little study time was reported by either group until two

days before the examination. Analysis of variance revealed that preparation increased significantly over pre-test intervals as did anxiety. Group A's total mean hours of study were 7.06 with a standard deviation of 4.43. B's group mean hours of pretest study were 7.47 with a standard deviation of 5.62.

The mean state anxiety manifested during pretest intervals correlated to .46 for Group A and .53 for Group B and both were significant at the .01 level. Trait anxiety correlated less well with .30 for group A and .19 for group B. Only group A was significantly different from zero. Correlations of study and performance were not significant -- they were .02 for group A and -.20 for group B. Correlations between mean state anxiety and performance were moderately strong in a negative direction -.23 for group A and .32 for group B; only group B was significant. The correlations between trait anxiety and performance were -.17 for group A and -.07 for group B; neither was significant.

One of the major findings of the study was that anxiety associated with the examination was significantly positively related to out of class preperation for that examination. It was hypothesized that as anxiety increases from low levels to a moderate level quantity preparation increases; as anxiety increases from moderate to high level preparation decreases. There was a zero relationship with the quantity of study and test performance.

The implications stated by Martin and Meyers were;

if examinations are given to stimulate out-of-class preparation they could be eliminated from the educational program with no loss in knowledge education. This would alleviate student anxiety and reduce instructional time and effort. The authors further suggest that an educator should carefully reexamine his rational for testing.(15)

Glass and Glass (6:440) also approach the concern professors exhibit towards anxious students in graduate schools. Quoting Joseph Luft they urge teachers to become more aware of themselves, of their own abilities and limitations, as a way to generate trust and alleviate anxiety in their students. They conclude their article by suggesting that graduate departments try fresh new approaches to teaching, flexible curriculum, no grades and small discussion groups as well as faculty-student collaboration and participation in departmental affairs. (6:445) They stress the concept that a change in the concept of education can be a revitalization of both the university and those who come there.

FEAR OF RESEARCH METHODS AND RELEVANT FEAR FACTORS

Despite graduate students expressing doubts as to the value of Research Methods for those working in the classroom, a review of the literature indicates that the rationale for including such a program is persuasive. Experiencing the course as a fundamental basis for graduate work may be important but Travers (19:7) suggests a more pervasive reason for the classroom teacher needing research training. The impact

of a "laboratory of science of learning has been slow and subtle but has now permeated the curriculum and the entire teaching act." Wall (21: 168) also discussed the relevance of Research Methods to modern education. In reviewing the strides education has made in the past he insists " our laboratory for growth and change is the school." This implies two things according to Wall, (1) a research team must have within it practicing teachers and, (2) the team must collaborate with teachers actually engaged in the classroom. Wall also suggests that as investigatory techniques improve and trained workers and money are avaliable teachers will be expected to do extensive action research:

> Teachers will need a basic research training as well as education background. (21:169)

Preferred Traits of A Researcher Designer

In a demographic inquiry concerning the training of of students specializing in Research Design and Development Fleury (5) reviewed studies by Krathwold (1966), Millikan (1966) and others. He was particularly interested in outlining relationships between expectations, academic success and subsequent on the job performance of student trainees. He surveyed a specific population using a newly developed questionnaire. Eighty five graduate level education research training programs supported by the U. S. Office of Education, fifty chief state school officers, and all Superintendent of Schools in the state of Massachusetts as well as fifteen research institute directors responded to the questionnaires.

Analysis of the questionnaire was focused on three sets of data, (1) research data about training, (2) information pertaining to practices of current training programs and, (3) information pertaining to potential employees of Research Design and Development Personnel. Information obtained indicated that success in research productivity and on the job success was related to certain student background factors which were:

1. A high performance on standardized measuring tests, i.e. the Miller's Analogies Test and the Graduate Record Exam.
2. A Bachelors and Masters Degree earned outside of the field of education, i.e. letters and science.
3. Age is an important factor; those under 32 were more productive on the job than those who received their doctoral degree after the age of forty.
4. Those who earn their doctoral degree with less than five years of educational experience were more productive than those who earned it after six or more years in the education field.
5. Exposure to at least one statistics course during a training experience was related to job productivity.
6. Participation in a systematic apprenticeship program during training experience. (4:6-7)

In conclusion Fleury points out that universities and colleges train Research Design and Development students with an education background. Training centers specifically look for other kinds of backgrounds for student trainees; interestingly enough they seem to be working at cross purposes. With authorities stating that teachers will be expected to do research in their classrooms and other authors suggesting that teachers do not have the necessary background factors to do successful research, teachers seem to be caught in the middle of a theoretical battle.

Other Possible Fear Provoking Factors

Polmantier, Ferguson and Burton (18), designed an experiment to compare the intellectual orientation of graduate students in different areas of education: Educational Psychology, Secondary Education, Guidance and Counseling, School Administration, Elementary Education, Physical Education, and Vocational and Technological. Male and female graduate students (N=360) in classes at Missouri-Columbia University education classes completed a thirty item Likert-type scale, the Intellectual Pragmatism Scale. Scores obtained were grouped into the seven education areas and data was then analyzed statistically to contrast and compare the means. Group means for the areas of Physical Education and Vocational and Technological Education did not differ; they were 104.58 and 103.64. The means for Educational Psychology, Guidance and Counseling, Secondary Education, Elementary Education, and School Administration differed little; 120.65, 118.55, 116.58, 113.04, 112.68. But the mean scores of Physical Education and Vocational and Technological Education do differ from the other five group means.

The interpretation of the material was -- two distinct groups exist on the intellectual - pragmatism continuum. The more intellectual group includes those in Educational Psychology, Secondary and Elementary Education, Guidance and Counseling, and School Administration. Those in the pragmatic group were students in Physical Education and Vocational and Technical Education.

The authors conclude that if differences in intellectual orientation exist among students then the assumption that all graduate students in education share the same intellectual orientation will not be valid.

A study suggesting the great differences of students in the same area of education was made by Bengel (3). An exploration of secondary teachers' attitudes toward research in relation to the degree of professional commitment they indicated was done in 1968. An attitude scale was developed to measure teachers attitudes in the area of (1) awareness and understanding of research, (2) applying research results, (3) initiating and doing classroom research. The variables of a teachers' personal background, the teaching experience, level of education, age, sex, marital status and areas of teaching as related to research attitudes were explored. Two other data sources utilized were the Measure of Professional Commitment and a personal information sheet. Two groups of a total sample of (N=323) secondary teachers were chosen to study: those who scored in the upper and lower quartile of the MOPC.

Significant differences in research attitudes were found between t se who were highly committed and those who were not so committed. Of the variables pursued only age influenced the research attitudes of teachers; teachers over forty have less positive research attitudes than teachers under forty. Mean scores within the high commitment parameters revealed that teachers with a masters degree hold less positive attitudes

toward research than teachers with less academic background. Bengel suggests that perhaps age was interacting with education to produce these results. Personal commitment seems to be a powerful variable for predicting teacher attitudes toward research; more so than any personal background factors.

Huettig and Newell (8), surveyed the relationship between the amount of training teachers had in modern mathematics and their positive attitudes toward mathematics. A thirty-one item Likert-like attitude scale and background questionnaire were completed by elementary schools (N=115). Data analysis consisted of checking to see if sixty per cent of each subgroup had expressed either positive or negative attitude responses to each item.

It was found that teachers with two courses in modern mathematics expressed 22 positive, 3 negative and 6 neutral attitudes. Teachers with no training expressed 9 positive, 18 negative and 4 neutral attitudes. Thus it was confirmed that teachers with modern math training were likely to respond positively to a math measuring attitude scale. In a second data analysis Huettig and Newell discovered that teaching experience bore a strong negative relationship to the positive attitudes expressed towards math. Teachers with one to two years experience in the classroom teaching expressed 18 positive, 2 negative and 11 neutral attitudes toward modern math. After three to nine years teaching experience 13 positive, 10 negative and 8 neutral attitudes were expressed. In 10 to 20 years those were modified to 7 positive, 18 neg-

ative and 9 neutral attitudes. After 21-48 years of classroom teaching the teachers expressed 5 positive, 17 negative and 9 neutral attitudes toward modern math. In Group I those with more training in modern mathematics were more positive toward it. The differences in positive versus negative reactions were significant beyong the .01 level. In Group II, as the authors expected teachers with larger numbers of years of teaching experience reacted less positively on the questionnaire. A chi-analysis of the data indicated that the difference in reaction was significant beyond the .01 level.

Another analysis was made. This was of the reaction of teachers in the upper grades who were involved with computational aspects of mathematics. It was thought that they would respond less positively toward new math on the questionnaire. A chi-square analysis of the data indicated that there was no significant difference in attiudes toward modern math by teachers of different grade levels.

The authors were most interested in the striking increase in negative attitudes for teachers with more than ten years experience. They urged those involved in math training programs to present with great care the positive aspects of the new program. (8:128)

Suggesting that students are either " person oriented" or "thing oriented" Waters(22) hypothesized that student college leaders in social activities and student government would score significantly lower on a mathematics usage test than their non-leader counterparts. He also hypothesized that

college leaders in contrast to non-leaders would select, with significantly greater frequency, college majors which are more " person oriented", rather than " thing oriented", i.e. natural science, business.

A school leader population (N=30) was compared with a control group of thirty non-leaders. Non-leaders were chosen randomly by a computer. Forty were procured and of those thirty volunteers were selected. To control background variables all subjects were required to be male, full time students, of junior and senior standing. ACT Mathematics usage scores previously administered to approximately 75% of each group were available. From the consistency of other test scores concurrently administered, it was decided that reduced samples were representative of each group.

Personal data questionnaires were administered to all subjects. There was a significant difference in ACT Mathematics scores ($p > .001$) between the student leader and non-leader groups. Personal data suggested that 50% of the student leaders (N=15) and 10% (N=3) of the non-leaders were Social Science majors. 64% of the student non-leaders selected either Business or Science as compared to only 23% (N=7) of the thirty student leaders. More college student leaders than non-leaders selected with significantly greater frequency major fields which are " person oriented" not "thing oriented".

--

Turning from the studies of commitment and mathematics variables in relation to teachers, the next study is concern-

ed with the relationship of student grade expectations, selected characteristics and academic performance for education, engineering, and business majors. Ayers and Rohr (2) posited that student performance in a course area seemed to depend upon the students own estimate of how well he would do in the course. This initial self-estimate plus information concerning the instructor and course determine his attitudinal set toward the class. The purpose of this study was to determine if the student's own estimate of his academic performance in the class was more accurate in the beginning, mid-point, or the end of the term. Concurrently, a determination was to be made of variables of sex, age, grade point average, and personality factors, to see if those who accurately estimated their performance could be identified from those who either over estimated or under estimated their performance. Three groups of of students were involved and variables that might be common to each group were sought; Education, Engineering and Business students were studied. Research hypotheses were that (1) a student's estimate of his academic performance was more accurate at the beginning of a course than at the mid-way point or end point; (2) that the variables of age, sex, grade point average grade received and personality variables would differ significantly among the students accurately estimated from those who either over or under estimated their final grade in the course; and (3) differences in variables expressed would be expressed differently by group members in Education, Engineering and Business fields.

Students (N=415) enrolled in third quarter sophomore classes in the fields of Education, Engineering, and Business were the subjects. Each course within the college consisted of four separate sections taught by two different instructors. The first class meeting investigators explained that a study was being conducted to determine how accurately each could estimate their success as measured by a final grade. They were given the 16 Personality Factor Questionnaire the first day. The second estimate of their final grades was taken at mid-point with the student aware of his current level of performance. The final estimate was taken the day previous to the final exam. The course grade estimated and the actual final grade were analyzed for all possible combinations or two variables for the pool subjects in Education, Engineering and Business i. e for the dichotomy change in grade versus no change in grade. All values were significant ($P > .05$) except Estimate One verwus Course Grade for Education and Engineering students who tended to receive grades they predicted at the beginning of the term. Business students at no point were able to accurately evaluate their performance. The findings of the study were in opposition to previous studies and show that (1) students were best able to evaluate their performance at the beginning of the term; (2) there was little difference between high achieving and low achieving students in ability to predict their course grade, but older students proved more accurate than youger students; and (3) none of the personality factors were found to be significant for over,

under, and accurate estimators in any of their respective academic areas. Ayers and Kohr seem to be suggesting that students in Education can accurately predict what their grade will be at the beginning of a course; older students will be more accurate in this estimate than younger students.

Two final papers, that may be relevant in discussing and identifying factors related to student fear of Research Methods are by Herald and Leventer. Herald (7:35) is concerned with the anxiety expressed by students faced with writing a difficult, time consuming formal paper. The anxiety is present she states and may be alleviated by the instructor who is kind and expresses concern. However, she says, graduate students do not want over protection from the faculty; but do want closer contact and more involvement from them in research activities. The faculty may consider constantyhelping the students a disadvantage -- too much time is required. Herald offers a simple and obvious remedy: reduce the faculty load.

Curious as to how attitudinal change was related to emotional and behavioral change it was explored by Leventer(12) in a test-retest design. Leventer hypothesized (1) that attitudial change such as fear reduction and improvement in self-esteem would develop so that feelings of love and anger could be more appropriately expressed. Behavioral changes were expected and high involvement was anticipated for those who underwent substantial change.

Semantic differential scales were used to measure fear

and self esteem; emotionality was determined by tape analysis and the extent of participation in group activity responses measured on tape. Involvement was measured by an open ended questionnaire. The hypotheses about fear and self esteem, anger and participation were confirmed and change in self-esteem whether increased or decreased, correlated with reduction of expressed anger. Fear reduction was highly correlated with increased self esteem and both correlated with increased participation. Active participation in an event seems to be highly correlated with the amount of fear reduction and anger reduction that will occur. The reduction of anger and fear expressed is also correlated with change in self esteem. Active participation in an event seems to be of the utmost importance for change in attitudes toward the event.

SUMMARY

Fear as the key emotion in anxiety has been related to disrupted learning of complex concepts by three prominent learning theories, the Iowa, Yale and Yerkes-Dodson theories (13). According to all three theories, only simple tasks can be learned under high levels of anxiety. The more anxiety that is present in a learning situation, the less able the student is to function with complex tasks.

Motivation can also be disrupted by high anxiety states. As the complexity of a task increases the motivation level is lowered so that motivation for complex tasks is less than it is for simple tasks. Or a student can be so "over" motivated

that he fails at the attempted task.(19)

Defense mechanisms (9) are used by an individual to cope with high anxiety levels. When high anxiety disbalances an individual he may use the most common of defense mechanisms and simply avoid the arousing stimulus, (13) Denial often co-teams with avoidance and is used as an anxiety reduction measure by the student.

Anxiety arousal in graduate school has been directed to the "infantilization" of students by professors who need to dominate dependent, submissive students. Students accepting this domination actually regress from independent individuals to dependent, helpless children. To free students of anxiety, professors must allow them to function as creative, independent adults.(14)

Though testing anxiety is " near-universal" (13) in our society, it has been maintained that grades are not feedback students can learn from but are "hidden criteria judgements." A grid that would encompass all of the components of a graduate student has been devised. (4) It has been further suggested that high anxiety of students toward exams could be modified by allowing the students to overtly express anxiety to a skillfull, kind instructor. (20) Others suggest that if instructors give tests to stimulate out of class learning preparation they could be eliminated from the eduation program. Students in a high anxiety situation studied for the exams only two days before the test. (15) The conclusion has been made that the only way to remove anxiety from the education experience

is to change the concept of education. (6)

Other relevant factors involving high anxiety in students come from a variety of studies. Some authorities (9) (20) state teachers need background training in research to do "in the classroom" research for the classroom is the "laboratory of education." Others, after surveying characteristics that make good research designers, indicate that those chosen from other fields than education are the most successful researchers. (5) One study indicates that those in education are divided into two groups on a different continuum -- intellectual and pragmatic, and that the training in education should not be the same for both groups. Measured attitudes of secondary teachers toward research divide teachers into other groups: those who are highly committed to research and those who are not committed to research. The only variable that seemed to influence the attitude was age but it was discovered that teachers with a masters degree have less positive attitudes toward research than those with less academic background. (3) In a study measuring the attitudes of teachers toward modern math it was realized that no differences of attitude were held by those in elementary and secondary education; that teachers with more math training responded positively toward modern math and that an increase in negative attitudes rose directly with the years of classroom teaching a teacher had. (8) It was also found that "person oriented" students exhibit less interest in the fields of business and science than "thing oriented" students. Still another

authority posits that students in education and engineering can indicate what their academic achievement in a class will be better at the beginning, than at the mid-point or end of a class: students in business can not. The older the student the more accurate his evaluation of self will be.(2) A study concerned with student fear of writing a formal research paper postulates that if the faculty load were cut and more time were given in direct contact with the students anxiety levels would drop and that dependence would not be initated.(7) And a final paper researching the attitude toward change such as fear reduction and improvement of self esteem postulates that student activity must be placed at a premium. Active participation is highly correlated with reduction of fear and anger -- and is also correlated with change in self esteem.

CHAPTER III

METHODS AND PROCEDURES

This chapter will describe the selection of the population, the creation of the attitude measuring instrument, the techniques used in procuring data, a review of the hypotheses tested and the statistical techniques used in analyzing the collected data.

SELECTION OF PARTICIPANTS

Graduate students enrolled in the first summer session at Arizona State University in EF500 Research Methods, were used for this study. (N=141) The students were enrolled in six separate classes with three different instructors: each teaching two classes. One class (N=23) served as a validation group for the instrument and their responses were not included in the statistical analysis.

DEVELOPMENT OF THE INSTRUMENT

A unique instrument was designed to measure and codify the attitudes of "uneasiness" graduate students expressed toward EF500 Research Methods and to collect background information relevant to the study.

The instrument was developed by (1) surveying information cards of students registered in the Research Methods classes of Dr. Stanley R. Wurster from 1971 through 1973. (N=422) Student cards of those currently enrolled were not used. The information

sought from the card was the answer given to an open-ended question, "Do you have any apprehensions toward Research Methods? And if so what are they?" A frequency count was made of the apprehensions listed by the students and the most frequently mentioned apprehensions were incorporated in an Likert-like attitude scale. (17:133) An item pool of twenty items were finally chosen: none of the items were neutral.

Five positions were identified on the attitude continuum running from "Greatly" to "Somewhat", "Uncertain", "Very Little", and "Not at all". The five positions were given simple weights of 5,4,3,2 and 1 for scoring purposes. And the twenty items chosen were given equal weight.

Background information questionnaire items were chosen after a review of literature and the survey of frequencies. Designed to gather personal data that might be relevant to expressed apprehensions toward Research Methods, information gleaned was sorted into a number items: sex, age, educational background, years spent in teaching, graduate hours beyond the B.A. and B. S. and others.

June 19, 1973 the instrument was presented to a group of authorities (N=24): twenty-three students enrolled in a Research Methods class and the teacher. The items in Part A of the questionnaire were all retained but several were revised for the sake of clarity. The twenty items in Part B were carefully culled to see that they expressed the fears as felt by the students adequately. One was removed as ambiguous and three others were edited. An additional item was chosen from

the frequency chart to bring the number back up to twenty.

After the authorities had established validity of the instrument and editing had occurred it was presented to the remaining population of the other Research Methods classes. (Appendix A)

DATA COLLECTED

The revised edition of the instrument and a cover letter (Appendix B) were presented to the five remaining classes(N=118) June 21, 22, and 25, 1973. The cover letter was used as a frontspiece for the study and stated the topic of concern, the purpose of the study, possible future use of the data, and requested the students co-operation while asking them to maintain anonymity by putting no name on the paper. The letter finally requested that the students be as honest as possible in their answers, and expressed the willingness to share results of the study.

By June 25, 1973, 110 of the original 118 instruments had been returned or 93.2%. One had only the date and "female" on it and had to be discarded as incomplete. Another was returned on June 27, and was too late to be included in the data analysis, leaving seven unaccounted for.

HYPOTHESIS TO BE TESTED

The null hypotheses tested in this study were:

1. There will be no significant difference in the

degree of fear expressed by male and female graduate students toward EF 500 Research Methods.

2. There will be no significant difference in the degree of fear expressed by older and younger graduate students toward EF 500 Research Methods.
3. There will be no significant difference in the degree of fear expressed by elementary and secondary teachers toward EF 500 Research Methods.
4. There will be no significant difference in the degree of fear expressed by teachers with moderate classroom experience and teachers with extensive experience toward EF 500 Research Methods.
5. There will be no significant difference in the degree of fear expressed by students who majored in education and those who majored in other areas, i.e. math and the behavioral sciences, toward EF 500 Research Methods.
6. There will be no significant difference in the degree of fear expressed by students with a moderate number of graduate hours and those with many graduate hours toward EF 500 Research Methods.

The items and the hypotheses tested in this study were chosen by reviewing the literature and surveying apprehensions listed by earlier students (N=422) in Research Methods.

STATISTICAL TREATMENT OF DATA

This study was made to determine the degree of fear expressed toward EF 500 Research Methods. An attitude scale with five positions of equal value was used to determine the degree of fear expressed by each student and a t-Test analysis of the questionnaire items was made by comparing sub-groups.

Six different relationships were investigated: (1) comparing the dependent variable fear with the independent variables of male and female, (2) comparing the dependent variable fear in the independent variables older (A= 31-40+ years) and younger (A=21-30 years) students, (3) comparing the dependent fear in the independent variables elementary and secondary teachers, (4) comparing the dependent variable fear with the independent variables teachers with moderate (1-7 years) classroom experience and teachers with extensive (8-20 years) classroom experience, (5) comparing the dependent variable fear in the independent variables, students who majored in education and students who majored in other fields, i.e. behavioral sciences and math, (6) comparing the dependent variable fear in the independent variables, students with a moderate number (21 and below) of graduate hours with those having a great number (22 and above) of graduate hours.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

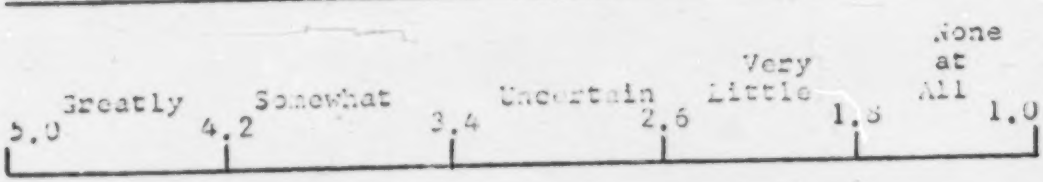
The purpose of this chapter is to describe and explain the data resulting from the statistical analysis. The first part of the chapter pertains to reponse to the attitude scale. The second involves analysis of the groups compared for some relationship with fear.

ATTITUDE SCALE

The responses of the graduate students (N=109) to the twenty items on the attitude scale were given a five part rating with the greatest value at five and the lowest at 1, i.e. the highest degree of fear for each item might be expressed at the topmost limit of the scale with no fear at all expressed at the lowest interval of the scale valued at 1. The group means were derived and interpolated on another scale with the numerical values chosen at intervals expressed below in Table I.

TABLE I

ASSIGNED VALUES FOR INTERVALS SCORED BY RESEARCH METHODS QUESTIONNAIRE



QUESTIONNAIRE

After the individual measured fear had been computed and assigned to each student according to their attitude scores, tables were set up for each of the hypotheses and the number of persons in each group and their degree of fear were properly recorded fr analysis. In order to test the six hypotheses posited in this study a t-Test was given to compare sub-groups of each hypothesis: those concerned with the differences of sex, age, educational background, graduate hours, teaching area, and years spent in the classroom.

PRESENTATION OF DATA

The number of each sub-group, the group mean and the standard deviation as well as the t-Ratio for each compared set of groups are presented in Table II.

Item 1: SEX

No significant difference in expressed fear was found between males (N=31) and females (N=76). The mean fear score of males was 3.61 with the standard deviation of .719; for females the group mean fear was 3.80 with a standard deviation of .736. The t-Ratio was 1.22 and both groups fell into the "somewhat" high rate of fear interval. The level of significance was not at the .05 level.

Item 2: AGE

Again no significant difference was found in the mean of expressed fear between age groups (A1=31-40+) (A2=21-30) years. The mean group fear for A1 (N=41) was 3.8 with a

TABLE II

GROUP CLASSIFICATIONS OF FACTORS RELATED TO FEAR OF RESEARCH METHODS

	Number	Mean	Standard Deviation	t-Ratios
Item 1 SEX				
Male	31	3.60	.719	1.22
Female	76	3.80	.736	
Item 2 AGE				
Age 1 (31-40+)	41	3.8	.652	.234
Age 2 (21-31)	59	3.76	.735	
Item 3 AREA				
Elementary	57	3.88	.742	1.45
Secondary	32	3.64	.738	
Item 4 BACKGROUND				
Education Major	77	3.9	.626	-3.144*
Other	16	3.25	1.103	
Item 5 GRAD HOURS				
B.A., B.S+(1-21)	36	3.744	.799	.377
B.A., B.S+(22-)	68	3.8	.654	
Item 6 CLASSROOM EXPERIENCE				
E1 (1-7 years)	80	3.81	.676	-.171
E2 (8-20 years)	21	3.78	.707	

* Significant at .05 level.

standard deviation of .652. A2 (N=59) mean fear was 3.76 with a standard deviation of .735. The t-ratio for the groups was .234 and once again both groups would be in the "Somewhat" high attitude interval of fear.

Item 3: AREA OF EDUCATION

A significant difference to the level of .05 was not found between groups of those majoring in elementary (N=57) and (N=32) secondary education. Mean group fear expressed by elementary teachers was 3.88 with a standard deviation of .742. Mean fear expressed for secondary teachers was 3.64 with a standard deviation of .738. T-Ratio for the group was 1.45 and both groups fell into the attitude scale interval of "Somewhat" high degree of fear.

Item 4: EDUCATIONAL BACKGROUND

There was a significant difference found between those students who majored in Education (N=77) and those who majored in Other fields (N=16)i.e. Math, Behavioral Sciences. The significance was at the .05 level and the t-ratio was -3.144. Mean group fear expressed by those in Education was 3.9, with a standard deviation of .626. Those who majored in Other displayed a mean group fear of 3.26 with a standard deviation of 1.103. This group placed in the "Uncertain" interval of group fear on the attitude scale.

Item 5: GRADUATE HOURS

No significant differences were found between groups of individuals with B.A.,B.S+(1-21) (N=36) and B.A.,B.S.+ (22-) (N=68) graduate hours in their expressed mean fear. The + (1-21) group had a fear mean of 3.74 and a standard deviation

of .799. The + (22-) hours group had a mean fear and a standard deviation of 3.8 and .654 respectively. The t-ratio was .377 and again the group was in the attitude interval "Somewhat" high degree of fear.

Item 6: CLASSROOM TEACHING

Again there was no significant difference in the expressed fear between teachers who had (E1)(1-7years) (N= 80) and teachers who had(E2) (8-20 years) experience (N=21). Mean group scores for the(E1) group were 3.8 for fear mean and .676 for the standard deviation. Group (E2's) mean fear score was 3.78 with a standard deviation of .707. The t-Ratio was -.171.

One additional analysis was performed. A frequency observation of student hours of graduate work beyond the B.A. or B.S. in certain intervals was made. The results are below, in Table III.

TABLE III

FREQUENCY TABLE OF GRADUATE HOURS BEYOND THE B.A. AND B.S. FOR STUDENTS CURRENTLY ENROLLED IN EF 500

Hours Taken	Number of students
3-6	5
9-15	18
18-24	20
27-33	45
36-42	5
45+	18
100+	1
135+	1

Hours that fall between intervals are placed in the next highest interval.

Just five students had enrolled in Research Methods with only three to six previous hours of graduate courses; eighteen students had nine to fifteen hours to their credit; twenty students had a total of eighteen to twenty-four hours completed before enrolling in EF 500; the largest number of students in the class, forty-five had taken between twenty-seven to thirty three hours of graduate before enrolling in Research Methods; five students had taken the course after thirty-six to forty-two hours had been completed; eighteen had finished some forty-five plus hours of graduate credit; one had one hundred hours and one one hundred and thirty-five before registering for Research Methods.

ANALYSIS OF DATA

During this study it was presumed that a high degree of fear toward Research Methods was felt by graduate students in the education department. An analysis of the attitude scales completed indicate that it not only exists but exists to a high degree. Of all the sub-groups studied: males and females; students between 31-40 and 21-31; elementary and secondary teachers; those with 1-21 hours of graduate work and those with 22+ graduate hours; teachers with 1-7 years of experience and teachers with 8-20 years of experience; students with an educational background, a high degree of anxiety exist except Other than education background, i.e. math and behavioral sciences.

The study to which this may be most closely related is Fleury (5) whose survey indicates that Research Design

and Development centers have discovered that successful trainees background factors included: a high score on the Millers Analogies test, (Education Doctorate students score a 53 to be in the 75th per centile and Master students only a 49); students outside of the field of education; want young trainees for those over 32 are not very productive; look forthose with little educational experience; expect a successful trainee to have had at least one course in statistics; and find a systematic apprenticeship program a must. Teachers for the most part do not meet this criteria.

A most interesting fact is that though theOther group scored in the next lowest interval, indicating less fear which was significant to the .05 level, their fear level was still moderately high at the 2.6-3.4 level while all other groups fell in the 3.4-4.2 interval. (See table I) Even they express a moderate degree of fear for Research Methods.

The basis of this all pervading anxiety may be related to an undefinable number of things. Anxiety may be related to the emotional involvement of graduate school that Loewenberg (14) discusses; the "near-universal" anxiety of testing that the Yale group described which Levitt (13) reviewed; it may be part of the high anxiety educational system that Wall (20) mentions with suggests for outlets necessary for student anxiety; the fear may be perpetrated by history as Mayhew explains (16); or may be the fear of grades as "hidden critiera" Elbow discusses; it may be related to the study Folmantier et al(10) where elementary teaching majors are

unable to study for a high stress class as their anxiety became too high; or related to Ayers and Rohr's study that(2) indicates that Education students can accurately identify what their academic achievement will be in a course at the beginning of the class, and may be even more accurate the older they are; or it may be related to the Yale learning theory reviewed by Levitt, (13) which postulates that if the student perceives something as a threat he will react to it as to a threat, whether an actual threat is present or not. What ever the complex pattern of variables may be, anxiety is present to a very high degree in graduate students currently enrolled in Research Methods.

The first null hypothesis is accepted. There is no significant difference in fear expressed by males and females toward EF 500.

In accepting the second hypothesis; there is no significant difference in fear expressed between older and younger students toward EF 500, there seems to be a difference of finding in opposition to Bengel(3) who found that younger teachers had more respect for and interest in research than older teachers.

In accepting hypothesis three there will be agreement with Huettig and Newell(8) who discovered that there was no difference in the way upper grade and lower grade teachers viewed mathematics.

In accepting hypothesis four there will be some dis-

agreement with another part of the Huettig and Newell (8) study for they found very negative views towards mathematics expressed by teachers who had been in the classroom ten or more years.

The null hypothesis, there will be no significance in the fear expressed between those in Education and Other fields, will have to be rejected. This agreement is in accord with Fleury's survey of student trainees in Research Design courses wherein he finds that one of the characteristics of a successful research designer is to be from some field other than Education, letters or science. It is also in accord with Water's study that indicates "people oriented" students do not matriculate in the math and science departments. Teachers in education may exist on an intellectual-pragmatism continuum as Polmantier et al. (18) indicate with differences apparent in classes that are not strictly education oriented.

Null hypothesis number six must also be accepted for there was no difference in the degree of fear expressed by students with few graduate hours(1-21) and those with many (22+) graduate hours. This finding is in opposition to Bengel (3) who found great differences in students who had lesser academic training. She discovered that teachers over forty have less positive attitudes toward research than teachers under forty. But her striking discovery was that teachers with a masters degree hold less positive attitudes toward research than teachers with less academic background.

Though she attributes this to an age and education interaction neither has been significant to a .05 level in this study.

A striking discovery in this study was the result of the frequency observation. Almost half of the students had waited until the end of their thirty hour masters program limit to takethis foundational graduate course, (27-33 hours) and another twenty have taken(18-24) hours before enrolling in Research Methods.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

The faculty and students of Arizona State University realize the threatening aspects of EF 500 Research Methods. Though the attitudes of uneasiness have been previously surveyed by one of the instructors, there had been no quantifying of those attitudes for purposes of study.

The purposes of this study were to (1) collect data which the instructors of Research Methods, might use to gain insight and direction for modifying, enriching or changing the current program, (2) determine and quantify the degree of fear expressed by graduate students toward EF 500 Research Methods, and (3) to identify graduate students who indicate a high measure of anxiety for Research Methods and compare them with students in whom measured fear is expressed to a low degree, is absent or is denied.

In investigating the background factors of students that may be relevant to the apprehensions displayed toward EF 500 the following hypotheses were developed:

1. There will be no significant difference in the degree of fear expressed by male and female graduate students toward EF 500 Research Methods.
2. There will be no significant difference in the degree of fear expressed by older and younger graduate students toward EF 500 Research Methods.

3. There will be no significant difference in the degree of fear expressed by elementary and secondary teachers toward EF 500 Research Methods.
4. There will be no significant difference in the degree of fear expressed by teachers with moderate classroom experience and teachers with extensive experience toward EF 500 Research Methods.
5. There will be no significant difference in the degree of fear expressed by students who majored in education and those who majored in other areas, i.e. math and the behavioral sciences, toward EF 500 Research Methods.
6. There will be no significant difference in the degree of fear expressed by students with moderate graduate hours and those with many graduate hours, toward EF 500 Research Methods.

The data for this study were procured from (N=141) students enrolled in six summer school classes during the first summer session at Arizona State University, 1973. One class (N=23) served as a validating committee leaving (N=118) available for the analytical study.

A two part instrument, an attitude scale and questionnaire were completed and returned by 93.2% of the population of students on June 25, 1973.

The instrument had been developed by surveying information cards of students registered in Research Methods classes of Dr. Stanley R. Nurster from 1971-1973. Part A, the quest-

ionnaire had items in it designed to collect personnel background data from the students which were relevant to the study. Part 3, the attitude scale was a twenty item Likert-like scale with a five part rating scale, ranging from "Greatly" to "Somewhat," "Uncertain", "Very Little" and "Not at All". The scale was used to measure the amount of fear expressed by each student toward EF 500 Research Methods.

The null hypotheses were analyzed by using the t-Test. The dependent variable for this study was fear with background information from the questionnaire used as independent varibles: sex, age, educational background, years in the classroom teaching, elementary and secondary teachers, and hours of graduate work completed were important variables. The HG 255 computer in the Payne Education building was used for the statistical analysis of the data.

During this study it was presumed that a high degree of fear was felt by graduate students toward EF500 Research Methods. An analysis of the students completed attitude scale indicates that a very high degree of anxiety exists for every sub-group studied except Others, those with a mathematics or behavioral sciences background. The high degree of anxiety interval that all groups except Others, indicate was the interval labeled "Somewhat" high with the numerical parameters of 3.4-4.2. Despite the degree of significance to the .05 level between those in Education and Others, those in the Others category exhibited an interval of fear at the

2.6-3.4 level "Uncertain", which was a moderate amount of expressed fear. A high level of fear is present in all Education graduate students currently enrolled in Research Methods.

No significant difference was found to exist in mean fear between male and female students enrolled in EF 500.

No significant difference was found in mean fear for age group 1 (31-40+ years) and age group 2 (21-30 years).

No significant difference was found in the group fear expressed by elementary and secondary teachers.

A significant difference was found in the degree of fear expressed by those students with education background and those who majored in Other fields; mathematics and behavioral sciences. The significance was at the .05 level.

No significant difference was found in expressed fear between teachers who had moderate years (1-7) and many (8-20+) years of classroom experience.

No significant difference was found between groups of individuals with (1-21) graduate hours and those with (22+) graduate hours in mean expressed fear.

The frequency observation however, indicated that about one half of the class had taken Research Methods after completing 27-33 graduate hours and another twenty had taken it after completing 18-24 graduate hours.

Conclusions

The pervasive phenomena of fear has been explored in this study. Anxiety expressed by graduate students is so

consistently high among the groups measured that it may simply override any other background factors which might otherwise have been relevant to a study of Research Methods. Even students with math and behavioral background training fell into an interval level displaying moderate fear: the 2.6-3.4 interval with a mean group fear of 3.2.

No specific conclusion as to the basis of this fear can be drawn except that it is felt towards Research Methods. It may be that this fear is compounded by other fears present in graduate schools as those listed by Loewenberg (14) domination and infantilization; or those listed by Wall (20) and Elbow (4) concerning testing as an anxiety force in graduate school. But despite Fleury's survey even those in math and the behavioral sciences evidence this fear, but of course we did not know if they had had statistics, and M...T and GRE scores were not listed; many seem not to have taken either test.

Conclusions reached on the basis of the hypotheses analyzed were:

1. Surprisingly males and females showed little difference in fear expressed towards Research Methods. Despite cultural expectations and backgrounds that boys evidence interest in math and science their mean fear scores were very close; 3.61 for the males and 3.8 for the females. With no differences in schooling or background training it would be expected that the females would evidence high uneasiness simply

because they have more tasks outside of school; cooking, cleaning, baby sitting, caring for husband, and less time to devote to Research Methods.

2. Suprisingly enough, no significant differences were found between the older and younger students in Research Methods. Despite being out of school for some periods of time the older students actually fared only a little less well than the younger students with a mean for the older of 3.8 and for the younger of 3.76. One wonders about the old adage, "Fools walk in where angels fear to tread" in relationship to the younger students. Did they know what Research Methods was going to be like? Despite Bengel's(3) conclusion that the younger less academically prepared student would have less negative attitudes toward research; the young do display almost as much fear for EF 500 as the older students.

3. Elementary and secondary teachers expressed no mean fear differences of significance; 3.88 for the elementary and 3.64 for the secondary teachers. Again the secondary teachers were expected to display more intellectual interest in subjects, though Polmantier, et. al (18) indicate other wise, and less fear. It was also thought that teaching higher level mathematics classes may make some difference to those exposed to them but apparently not.

4. The significance in differences between those in Education and Others, may be related to the "person oriented" "thing oriented" concepts posited by Waters(22). Perhaps

those who go into teaching are "people oriented" and as Fleury's survey indicated, not able in techniques needed for Research Methods; perhaps one must be "thing oriented" to research well, or even understand the complex abstract concepts.

5. The difference in fear expressed was not significant between those who had many graduate hours and those who have few. Those who had many hours (22+) evidenced slightly less fear towards Research Methods than those who had fewer hours (1-21); 3.744 to 3.8 mean fear. Could it be that those who put off taking the course are waiting until they feel psychologically ready to face it before enrolling? If taken last when all else has been completed towards the higher degree are the stakes higher? Is it then seen as possible to endure the class or lose the degree when earlier it was not?

6. There was no significant difference shown between teachers who had little and a great deal of classroom experience and fear of Research Methods. In fact those with less (1-7) years experience showed more mean fear than those with more (8-20) years experience. This was another unexpected result and can only be questioned? Do teachers who come back for a masters degree after many years in the classroom steel themselves, prepare for the worst, simply because they are older and more experienced, or perhaps want the degree so badly?

The frequency table with fifty per cent of the students postponing enrolling in the class until they have completed 27-33 hours indicates that a great deal of avoidance for Research Methods does occur and that the suspected graduate

syndrome "that's the last class to take", actually does exist.

Recommendations

The following recommendations are suggested for utilizing this study as a springboard for further research:

1. Graduate students currently enrolled in Research Methods should be given a quasi-posttest the last day of class. It should include the attitude scale previously presented plus a new front section incorporating the open ended questions:

- Do you feel differently about EF 500 now than you did at the beginning of the class? How? Be specific?
- What did you dislike most about this class? What did you like about it? What would you like to see changed and how? Specify please
- Any other recommendations you would like to make?
- Is your grade for this course going to be any different than you thought it might be? lower? higher? the same?
- Do you feel the anxiety you felt for this class was warranted? Was it as bad as you thought it was going to be?

2. A pretest should be given to new students entering summer school next five weeks. Part A the questionnaire should be revised to include open statements about attiudes toward the course and the grade expected at the beginning of the course. The posttest should follow.

3. A research project similar to Martin and Meyers could be conducted to discover if there is any basis for testing in Research Methods.

4. Research in the school systems of the state would indicate if the districts in fact are going to expect teachers

to do in the classroom research in the future as Travers (19) and Wall(21) suggest or the districts pattern in regards to research seems to be toward hiring trained Research and Design specialists to do the research; to allow the teachers to teach.

5. Fleury's (5) indication that a good research designer has characteristics that education students do not have could be studied.

6. Water's (22) contention that "person oriented" students are different than " thing oriented" students warrants investigation. Are students in education "person oriented"?

7. A study similar to Bengel's(3) should be repeated to discover if those with a masters degree are actually more negative to research methods than those with less training, and if so why? Could this be caused by EF 500 or the thesis itself?

8. Polmantier's scale (18) could be studied in terms of students in research methods; other types of scales could be devised which might indicate which of those within the boundaries of the intellectual-pragmatism scale intellectual are actually suited for research methods.

9. The author recommends that immediate changes be made in the current program Research Methods. The author further recommends (on the basis of his own experience in this course) that an experimental program be set up for the coming fall which would include the following considerations:

- Research is far to complex and comprehensive a course to be taken in one semester and should be split into two semester courses.
- To reduce anxiety and fear the course should be come an active participation course with students working

together in groups to prepare a variety of different types of research studies and if it is necessary a final paper of their own at the end of the year.

- A laboratory could be set up with teaching assistants students have access to at all times. Visual aids, and manipulative devices could be designed which would make the concepts to be learned easier to understand, simpler to deal with. Adding machines and calculators would be available at all times and computer use urged as a learning experience.

- Development of a programmed learning text which covers statistics and other important learnings could be developed and entitled Research Methods Without Fear. Lab experiences would be continued.

-Though no tests would be given (they would not be necessary with a programmed text and a vast area for experiential learning; lectures would continue but be minimized.)

The purpose of all of this would be (1) to make Research Methods a meaningful experience for graduate students; not a course to be dreaded, hated whose techniques will never be used again-- and (2) to include high active participation to reduce fear and anxiety in a high stress class so that the students can actually learn to use the complex concepts involved. The students won't have to turn to a low keyed course for credit and after taking it say, " Oh, yes, I took the course from --- but I didn't learn a thing." This author will be the first to register for the new class.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Arizona State University. General Catalog. Volume 64: 2, April, 1971.

2. Ayers, Jerry B., and Rohr, Michael E. The Relationship of Student Grade Expectations, Selected Characteristics, and Academic Performance for Education, Engineering and Business Majors. Cookeville: Tennessee Technological University, 1972. ED 060 783

3. Bengel, Rose, A., "Teacher' Attitudes Toward Research As Related To Professional Commitment," Dissertation Abstracts Vol. A38:1008, September, 1969.

4. Elbow, Peter H., " More Accurate Evaluation of Student Performance," The Journal of Higher Education, Vol. 40:219-223, March, 1969.

5. Fleury, Bernard J., Jr, And Others. Demographic Data for Trainers of Educational Researchers. Amherst: Massachusetts University, 1970. ED 056 054

6. Glass, John, F., and Glass, Judith, "Improving Graduate Education," The Educational Forum, Vol. 32:439-447, May, 1968.

7. Herald, Mary, C., "Facilitating Research and Writing Among Doctoral Students," The Educational Forum, Vol. 33: 31-39, November, 1968.

8. Huettig, A., and Newell, J. M., "Attitudes Toward Introduction of Modern Mathematics Program by Teachers with Large and Small Number of Years' Experience," Arithmetic Teacher, Vol. 13:125-130, February, 1966.

9. Hutt, Max, L., and Gibby, Robert, G. Patterns of Abnormal Behavior. Boston: Allyn and Bacon, Inc., 1957.

10. Irvin, Floyd, S., "The Relationship Between Manifest Anxiety and Measure of Aptitude, Achievement, and Interest," Educational and Psychological Measurement, Vol. 29:957-961, Later, 1969.

11. Izard, Carroll, E. Patterns of Emotions: A New Analysis of Anxiety and Depression. New York: Academic Press, 1972.

12. Leventer, Esther, A., "The Interrelationship of Self Esteem, Fear, Emotionality, and Behavior in Training Laboratories," Dissertation Abstracts, Vol. A38:388, September, 1969.

13. Levitt, Eugene, E. The Psychology of Anxiety. New York: Bobbs-Merrill Co., Inc., 1967.

14. Loewenberg, Peter, "Emotional Problems of Graduate Education," The Journal of Higher Education, Vol. 40:610-622, November, 1969.

15. Martin, Roy, and Meyers, Joel. Effects of Anxiety on Quantity of Examination Preparation. Philadelphia: Temple University, 1972. ED 061 549

16. Mayhew, Thomas, " A Commentary on Open Schools in the Community". Unpublished speech made at Arizona State University, June, 1973.

17. Oppenheim, A. N. Questionnaire Design and Attitude Measurement. New York: Basic Books, Inc., 1966.

18. Polmantier, Paul, and Ferguson, John and Burton, Robert, "Intellectual Attitudes of Graduate Students in Education," The Journal of College Student Personnel: American College Personnel, Vol. 11: 33-35, January, 1970.

19. Travers, Robert, M. W. Essentials of Learning. New York: The Macmillian Co., 1972.

20. Wall, W. D., "Research into Motivation," Educational Research, Vol. 1:31-36, 1958/59, 1969.

21. Wall, W. D., "The Future of Educational Research," Educational Research, Vol. 10:163-69, June, 1968.

22. Waters, Thomas, J., and Daugherty, Robert, A., "Student Leadership, Mathematics, Aptitude and College Major," Psychological Reports, Vol. 27: 406, July, 1970.

APPENDIX A

QUESTIONNAIRE

AND ATTITUDE SCALE

Part A

Please fill in the blanks with the appropriate information:

Date_____

1. Sex: Male____ Female____

2. Age: 20 - 25 ___
25 - 30 ___
30 - 35 ___
35 - 40 ___
over 40 ___

3. Education Area:
Elementary_____ Secondary_____
Administrator_____ Other (specify)_____
_____

4. Undergraduate background:
Education_____ Behavior Sciences_____
Math_____ Liberal Arts_____
Other_____
Year completed B.A,, B.S._____

5. Graduate hours beyond
B.A, B.S_____

6. Years spent in actual classroon teaching: _____

7. Years spent in field of education: _____
Specify occupation_____ _____

8. Educational objective:
M.A._____ PH.D._____ Other (specify)
_____
_____

9. Grade point average:

Undergraduate	Graduate
2.0 - 2.5____	2.0 - 2.5____
2.6 - 3.0____	2.6 - 3.0____
3.1 - 3.5____	3.1 - 3.5____
3.6 - 4.0____	3.6 - 4.0____

10. G.R.E. Score_____ M.A.T. Score_____

Part B Instructions:

Below are 20 statements concerning Research Methods about which we all have beliefs, opinions and attitudes. Since we all think differently about such matters this scale is an attempt to let you express your beliefs and opinions. Please respond to each statement by placing a check in the appropriate box. Respond as honestly as you can.

The following statements offer suggestions as to what contributes to the uneasiness felt about Research Methods. Please indicate the extent to which each of these CONTRIBUTE TO YOUR UNEASINESS:

	Greatly	Somewhat	Uncertain	Very little	None at all
1. Assignment of grades					
2. Necessary typing of papers					
3. Rumor about course					
4. Time consuming					
5. Necessary reading of statistics					
6. Instructor attitude					
7. Choosing a research topic					
8. Pressure of course requirements					
9. Exposure to new vocabulary					
10. The unknown					
11. Requirement of writing formal research paper					
12. Utilization of University library					

The following statements offer suggestions as to what contributes to the uneasiness felt about research methods. Please indicate the extent to which each of these CONTRIBUTE TO YOUR UNEASINESS:

	Greatly	Somewhat	Uncertain	Very little	None at all
13. Coverage of new material					
14. Standards established for course work					
15. Getting a passing grade					
16. Work required outside of class					
17. Arithmetic required in calculating statistics					
18. The tests					
19. Limited experience with research					
20. Very difficult course					

Comments:

APPENDIX B

COVER LETTER

June 19, 1973

Dear Student,

The attached questionnaire, which is concerned with the background and attitudes of students currently enrolled in EF000 Research Methods, is part of a required project being prepared by the author for Research Methods. This project is specifically concerned with apprehensions felt by graduate students toward the Research Methods class. It is hoped that the information discovered will provide insight and direction in aiding teachers to modify the course.

As a graduate student currently enrolled in Research Methods your cooperation is particularly important. Reactions to your current experiences in Research Methods will contribute significantly toward making this a meaningful project.

It will be appreciated if you will complete the questionnaire. To maintain anonymity, put no name on the paper. We welcome any comments you may have about the questionnaire and will be pleased to share the results of the study if you desire.

Sincerely yours,

Rhonda Marlene Ball

Rhonda Marlene Ball
Fellow Student